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Cost Accounting

An Explanation of Principles
and a Guide to Practice for the

Hosiery Industry

John A. Wild,
F.C.W.A.

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COST ACCOUNTING

AN EXPLANATION OF PRINCIPLES
AND A GUIDE TO PRACTICE FOR THE

HOSIERY INDUSTRY

BY

JOHN A. WILD, F.C.W.A.

Author of "Ascertaining Cost of Production."



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ASCERTAINING COST OF PRODUCTION

SECOND EDITION.

BY

JOHN A. WILD, F.C.W.A.

Author of "Cost Accounting."

An Explanation of Principles and a Guide to Practice for the PRINTING and ALLIED TRADES, with Chapters on the Application of those Principles to OTHER INDUSTRIES.

CONTENTS.

INTRODUCTION.—The Basic Factor—
Departmentalisation Essential—Stocks and
Stocktaking—Ascertaining Production—
The Analysis of Wages—Consumption of
Stores—Ascertaining Departmental Cost—
The Analysis of Expenses—Recovering
Working Expenses—Ascertaining Job
Cost—Management from Cost Records—
Cost Accounts—Departmental Debits and
Credits—Ascertaining Pottery Costs—Re-
covering Pottery Costs—Cotton Spinning
and Weaving Costs—Costing for the Small
Manufacturer—Conclusion.

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AUTHOR'S PREFACE.

The purpose of this volume is to outline a system of Cost Accounting in the Hosiery Industry that will secure efficient management, ascertain the correct cost of the different kinds of goods made, the Profit or Loss on each Department, and reveal the exact financial position of the business at any moment.

The text is liberally illustrated by Forms and Examples showing how, in this industry, the Cost and Works Accounts can be so interwoven with the Factory Records and the Financial Accounts that the whole of the information necessary can come forward through an efficient Counting House.

The figures given in the various Accounts are illustrative only. Each Manufacturer should ascertain the Costs of his own Factory Departments and use that knowledge in developing his business on profitable lines.

No Manufacturer can afford to lose orders because his figures are wrong. No Manufacturer can continue to take orders at a loss without eventually getting into difficulties.

No Manufacturer can afford to ignore the information to be derived from an efficient system of Cost and Works Accounts, for it is a sure safeguard against unprofitable trading.

Modern methods of manufacturing and of competition make it absolutely necessary that the correct Cost Price shall be known so as to ensure a margin of Profit at the end of the year.

During the last few years those manufacturers who have an efficient system of Cost Accounts had cause to rejoice, for the heavy fluctuation in the cost of Materials, Labour and Overhead has been the cause of many heavy losses.

Although the volume is specially written for the Hosiery Industry, the fundamental principles are such as can be applied to any other manufacturing business.

I hope that the contents of this book will prove instructive and interesting to all who desire to gain the benefits to be derived from an efficient system of ascertaining the Cost of Production and that those who adopt the principles outlined herein will be amply repaid by increased efficiency, economy and prosperity.

JOHN A. WILD.

May 20th 1924.

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HOSIERY ACCOUNTS.

CHAPTER I.

INTRODUCTION.

In laying down a system of Cost Accounting for any industry it will of necessity be found that there are certain definite underlying principles that must be followed. Any deviation from these fixed fundamentals will negative the efficiency, accuracy and value of the system and will lead to unprofitable trading.

A man embarks upon a business venture with a view to increasing his capital and enjoying a comfortable income as the result of his efforts, he is in business for profit.

Profit is the difference between the Total Cost of Purchases, including all the costs of Production and of Distribution, and the net amount of cash received for these purchases when they are sold. It is evident then that no business can continue indefinitely without profit because the capital would eventually be exhausted.

In simple merchanting there is a known Purchase Price. The Selling Price is also known, therefore it is possible to ensure a profit on the transaction.

In a manufacturing business the finished article is purchased in the form of raw or partly manufactured material, Labour and many other costs go into it, and it is eventually sold in a form entirely different to that in which it was purchased.

Without an efficient system of Cost Accounting it is impossible to know the total amount actually paid for the article. It is therefore impossible to ensure that it shall be sold at a figure that will leave a margin of profit.

If the article to be manufactured is a dozen pairs of Ladies' Hose the material will be purchased in the state of yarn, wages will be paid to the employees for knitting the Hose, the dyer for dyeing, further wages will be paid to the employees engaged in the final operations in the warehouse, and papers, boards, or boxes and printing must be provided.

It is possible to know how much the dozen goods has cost in these items, but it is also necessary to know how much has been spent in those other items which are such a heavy expense of manufacturing under modern conditions.

There is Rent, Rates and Taxes of the Factory, Power, Lighting, Upkeep and Depreciation of the Plant and Machinery, Wages paid to employees who are not actually engaged on the knitting of the goods, Supervision, Management, Clerical Staff, Office Expenses, and a host of other items of expenditure which are part and parcel of the Purchase Price.

If the amount of these items is not known then it is impossible to know whether any particular line of goods is sold at a profit or a loss.

The Trading and Profit and Loss Accounts will show at the end of the year whether a profit or a loss has been made in bulk, provided, of course, that there has been no wangling of the stocks, but do not show, nor give the slightest clue to, the source of this profit or loss. They give no indication as

to which department or which line of goods is remunerative and which is losing money.

The Audited Accounts may show that the Overhead Expenses for the period amount to £1,000, and that they bear a relation of 20 per cent. to the total cost of manufacturing or 25 per cent. to the total of the items other than Overhead Expenses.

	£
Yarn	2,400
Dyeing	400
Wages	1,200
Expenses	1,000
Total Cost of Manufacturing	<u>£5,000</u>

It seems reasonable to say that as the Overhead Expenses are 25 per cent. of the Wages, Dyeing and Yarn Cost that this percentage can be used to recover these expenses on the dozen goods.

	£	s	d
Yarn in 1 Dozen Goods, allowing for Waste	0	10	0
Wages Paid for Knitting, &c., plus Bonus	0	2	6
Paid for Dyeing	0	2	6
Wages Paid in Warehouse	0	0	6
Cost of Papers, Boards or Boxes, &c.	0	0	6
Total	0	16	0
25 per cent. for Expenses	0	4	0
Total Cost of Manufacturing	£1	0	0
10 per cent. for Profit	0	2	0
Selling Price per Dozen	<u>£1</u>	<u>2</u>	<u>0</u>

This is not correct, for if the factory is making goods of a cheaper yarn, or if yarn falls in value, it will result in a loss, because the percentage allowed for expenses is insufficient to cover the expenses actually incurred.

				£	s	d
Yarn in 1 Dozen Goods	..	..	..	0	5	0
Wages, Dyeing, &c., as above..	..	..	..	0	6	0
Total	..	..	..	0	11	0
25 per cent. for Expenses	..	..	..	0	2	9
Total Cost of Manufacturing	..	..	..	0	13	9
10 per cent. for Profit	..	..	..	0	1	4
Selling Price per Dozen	..	..	..	£0	15	1

On the other hand, if yarn rises in price, or if goods are made of a more expensive yarn, the cost of the dozen goods will be over-estimated, and as a result orders will be lost because the price quoted will be too high in competition with other manufacturers. The factory will be short of orders, only partially occupied, and it will be certain that the lower output cannot make up the deficit.

				£	s	d
Yarn in 1 Dozen Goods	..	..	..	1	0	0
Wages, Dyeing, &c., as above..	..	..	..	0	6	0
Total	..	..	..	1	6	0
25 per cent. for Expenses	..	..	..	0	6	6
Total Cost of Manufacturing	..	..	..	1	12	6
10 per cent. for Profit	..	..	..	0	3	3
Selling Price per Dozen	..	..	..	£1	15	9

The all-round percentage for expenses, whether calculated on the known costs of manufacturing, or by an equivalent percentage on the Selling Price, results in unprofitable trading, because the Overhead Expenses do not vary in sympathy with the rise or fall in the price of yarn.

Given the same output in the total number of dozens knit and wages paid there will be approximately the same amount of Overhead for Rent, Rates, Taxes, Power, Depreciation, Supervision and other expenses.

The percentage on the Sale Price is in common use in many hosiery factories to-day. It is a relic of the old hand frame days, and is not at all suited to present conditions of manufacturing.

Under this system the Cost of Manufacturing for a period in which a lower price yarn was consumed would probably be :—

					£
Yarn	..	..	..	..	1,200
Dyeing	..	..	..	..	400
Wages	..	..	..	..	1,200
Expenses	..	..	..	..	1,000
Total	...	..	..	..	<u>£3,800</u>

The expenses are now 27 per cent. of the total or 36 per cent. of the known costs against 25 per cent., which is the basis on which the Selling Price of the goods has been fixed. Therefore it is evident that there will be a loss at the end of the year.

If yarn had risen in price then the Accounts may show :—

					£
Yarn	..	..	..	..	4,800
Dyeing	..	..	..	..	400
Wages	..	..	..	..	1,200
Expenses..	..	..	..	..	1,000
Total	..	..	..	..	<u>£7,400</u>

and in fixing the Selling Price the goods have been costed too high, the percentage of expenses to the known cost of yarn, wages and dyeing being only $15\frac{1}{2}$ per cent. against 25 per cent. used in estimating.

The same thing applies if the factory is manufacturing a mixed lot of lines, some with expensive yarns of good quality and others of the cheap cotton variety.

To arrive at the correct cost of each line made it is evident that rule of thumb methods in fixing prices and office methods must go. It is also evident that the old system of calculating the Overhead Expenses on the Selling Price or on the total of materials and labour is wrong and leads to unprofitable trading.

Modern competition, modern business demands that most careful attention be given to Cost Accountancy. The successful factory is that which scraps the obsolete methods, which ascertains its costs on a sound basis, and, having ascertained that cost, can fix a Selling Price that will ensure a profit at the end of the year.

CHAPTER II.

THE BASIC FACTOR.

What is the correct method of Costing a dozen goods? The answer to this important question is the key to profitable trading, for, unless the correct cost is known, it is impossible to fix a Selling Price which will be certain to yield a profit on the Trading Account at the end of the year.

It will be impossible to cut out those lines on which a loss is being made and to cultivate those which are produced and sold at a price which leaves a margin of real profit to accumulate and finally be divided as a dividend to the shareholders.

The general percentage on the Selling Price or on the total Material and Labour Cost to recover all the Overhead Expenses is clearly proved to be most unsatisfactory in costing a dozen goods; it is therefore necessary to discover a more reliable and accurate basis, and the only reliable basis is to make each process or department bear its own expenses and recover those expenses on the value of its production.

Value of production is the enhanced realisable value of the goods after an operation or process has been performed. It is the amount of Productive or Direct Wages which has

been expended on that process or operation plus the amount of Overhead necessary to enable that process or operation to be performed.

Without Rent, Rates, Taxes, Power, Light, Upkeep and Depreciation of Plant and Machinery, and all the other necessary items of Overhead, it would not be possible for Labour, as represented by the Direct or Productive Wages, to have increased the value of the goods.

If a dozen pairs of ladies' hose have been completed in the rough, that is, in the undyed state, the yarn as yarn would not be more valuable, rather as yarn it would be less valuable, but Labour, in the form of Productive Wages, by making use of the items included in the Overhead has converted that material from one form to another.

The enhanced value is the same irrespective of the initial cost of the yarn, whether it cost five pence or five shillings or whether it belongs to another manufacturer for whom it is being worked up into goods.

Wages paid are not all Direct or Productive Wages, for if employees are paid at Time Rates they may be employed wholly non-productively, and the work-in-progress may not have any further value added to it.

Direct or Productive Wages are wages which are paid for a necessary operation of normal production, ascertainable in definite quantities and chargeable against definite goods.

Before commencing to make a dozen goods it is possible to ascertain the amount and the value of the yarn required. The wages for winding the yarn, knitting the legs, turning off the heels, footing, turning off the toes, seaming, mending and inspecting the goods are at fixed rates, being invariably on a piece-work basis. The bonus can be added to these

wages so that the total amount to be paid for making these goods is known.

All the known costs of producing a dozen goods can be treated as direct costs in estimating the cost of a dozen goods. The only unknown item is the cost of the Overhead that has been incurred or will be incurred in making these goods.

If only one kind of hose is made in the factory the Direct or Productive Wages will bear a definite relation to the total dozens produced, it therefore would not matter whether the Overhead was calculated as a percentage to the Direct or Productive Wages or as a rate per dozen goods made.

If several different lines are being made in the factory, the Direct or Productive Wages will vary on the different lines and the agreement between Productive Wages and dozens produced will be lost.

It is therefore necessary to discover the Unit of Production, for the Unit of Production in any industry is the correct basis on which to recover the Overhead of any Department, Process or Operation.

As Direct or Productive Wages are at definite rates for a definite amount of production, and these rates are fixed so that an average worker will be able to earn approximately the same amount of wages irrespective of the kind of goods he is making and irrespective of the dozens made, it necessarily follows that a longer time will be taken to produce certain classes of goods than others.

The rent and all the other items which make up the overhead of the factory will cost more per dozen on goods which take a longer time to make than on goods which take a shorter time and for which the productive wages are less.

It is evident, therefore, that the unit of production in the factory is Direct or Productive Wages, and that the correct

way of recovering the Overhead expense of the Factory Department is to charge it on the basis of its ascertained percentage to these wages.

Having ascertained the percentage that the Overhead Expenses of the factory bears to the Direct or Productive Wages of the factory, it is now possible to estimate the cost of a dozen goods up to the rough or undyed state.

The goods are now at the finish of the first stage of production, and may remain in the rough for some time or go out to dye, but in any case, for the purpose of efficient control of the business, these goods should nominally, if not actually, be regarded as having gone to a rough stock from which they would be issued as required for dyeing and completion.

This rough stock will prove an admirable point of control and of co-ordination of the factory and the warehouse sides of the business.

The charge for dyeing is a known amount and can be treated as a direct item in estimating or costing the goods. In all probability the goods will come back ready trimmed and pressed, and will go to the warehouse, where the operations of mending, pairing, stamping, folding and boxing are performed.

As all goods passing through the warehouse will go through the same processes the cost of the warehouse in total, including wages and overhead expenses, can be ascertained as a cost per dozen of the output without violating any fundamental principle of Cost Accountancy.

The papers, boards, boxes, twine and printing charges should be kept distinct and be reckoned as a direct item in the cost of the dozen goods.

ESTIMATE FOR 1 DOZ. FASHIONED HOSE19....

Description

Weight of 1 Doz. Goods in Rough..... lb.....oz.

Details						Estimated Cost		
						£	s	d
YARN, including Allowance for Waste :—								
.....lb.	.....oz.	@	:	:				
.....lb.	.....oz.	@	:	:				
.....lb.	.....oz.	@	:	:				
Total Weight & Cost	.....lb.	.....oz.	..	..		£	:	:
DIRECT FACTORY WAGES :—								
Winding Yarn for 1 Doz. Goods	..	..	£	:	:	
Legger .. ..	..	..	..	:	:
Turning Off Heels	..	..	..	:	:
Footing .. ..	..	..	..	:	:
Turning Off Toes	..	..	..	:	:
Seaming.. ..	..	..	..	:	:
Mending.. ..	..	..	..	:	:
Inspecting .. ..	..	..	..	:	:
Total Direct Factory Wages	..	..	..	:	:
Bonus @ d. in the rs.	..	..	..	:	:
Factory Overhead Expenses%	to Factory Wages ..					£	:	:
Total Cost to Rough Stock .. ..	..	..	..	..	..	£	:	:
Dyeing .. ..	..	..	..	..	..	£	:	:
Warehouse Wages and Expenses @	per Dozen	..	..	..	..	£	:	:
Paper, Boards, Boxes, Printing, &c.	..	..	..	..	..	£	:	:
Total Manufacturing Cost	..	..	..	..	..	£	:	:
General Expenses,%	on Sale Price					£	:	:
Estimated Loss on Seconds	..	..	..	..	..	£	:	:
Estimated Profit	..	..	..	..	..	£	:	:
Sale Price .. ..	..	..	..	..	..	£	:	:

This gives the cost of the goods up to and including the total cost of manufacturing, but we have in addition certain charges in the Overhead that are not incurred in either the Factory or the Warehouse Departments. These include Directors' Fees, Counting House, Carriage, Travellers' Salaries and Expenses, Commission on Sales, &c.

The correct method of recovering these General Expenses is to calculate them as a percentage on total sales, or use an equivalent percentage on the total manufacturing cost.

It is now possible to draw up the Estimate Form on which every line that is made in the factory should be costed. On this Estimate Form there will be an item Loss on Seconds. This will have to be provided for, although it does not appear in the financial accounts or in the analysis of expenses which we shall have to make in order to ascertain the percentage for Factory Overhead, the rate per dozen in the Warehouse, and the percentage to be added for General Expenses.

Every manufacturer knows that all the goods made do not come through as perfect goods. Some have to be sold at a reduced price because of their faults. The difference between the price realised for these seconds and the price which would have been realised if sold as perfect goods is a loss of profit which must be allowed for in fixing the Selling Price.

CHAPTER III.

THE ANALYSIS OF EXPENSES.

ASCERTAINING THE OVERHEAD PERCENTAGE OR RATE.

It is not possible to wait until a scientific system of Cost Accounts is fully established before fixing the percentage or rates per dozen of the Overhead for use in estimating the cost of the goods, but must utilise the information available so as to ascertain as nearly correct as possible the amount of these expenses.

Assuming that the Factory consists of two Departments, one making fashioned hose on Cotton's Patent Frames, and the other making seamless hose on the Circular Machines, each of these Factory Departments having their own Warehouse Departments, it will be evident to those whose business it is to get orders and to make the goods that the Cost Price and the Selling Price of these lines are not comparable.

In the Fashioned Hose Department the wages paid for making the goods will be considerably higher per dozen than is paid in the Seamless Department. The expenses of these two Factory Departments will not bear the same relation to Productive Wages, therefore, if we use the same percentage in each

Department, one kind of goods will be bearing charges which are incurred by the other kind of goods.

It is essential, therefore, that each of these Factory Departments should be charged with their own expenses, and must recover their expenses on their own goods.

Only by this method is it possible to prevent one department from selling its product at too low a figure and the other, by having to bear charges beyond its own fair cost, from fixing its Selling Price too high, resulting in a loss of orders and eventually a loss of profit.

It is necessary to take the Trading and Profit and Loss Accounts as prepared by the accountants, and divide the expenses shown therein over the departments.

As very little extra effort will be involved, it is advisable to prepare Departmental Accounts at the same time.

In analysing these expenses over the Fashioned Factory, Seamless Factory, Fashioned Warehouse and Seamless Warehouse according to the amount of each of these expenses that is incurred by the respective departments, it will be found that there are certain expenses that cannot be directly allocated to any department, but are a charge against the business as a whole, or are incurred by the Selling Organisation.

These must be treated as a General Expense and recovered either on the Total Cost of Manufacturing, or as an equivalent percentage on the Selling Price.

It is not necessary to divide the Stock on Hand at the commencement and at the end of the period for the purpose of the Analysis of Expenses, but this division will be required for the Departmental Accounts. It will easily be ascertained from the Inventory of Stocks as taken at the respective stocktakings.

Dealing now with the other items as shown on the Trading Account, we transfer them to a sheet ruled to take the total

and the analysis of the total into the four departments and the General Expenses.

Item 1.—Yarn. In a fully organised system of Cost Accounts yarn would be bought for stores and would be debited to Yarn Store Account. On being issued to the Factory the Store would be credited, and the Work-in-Progress Account of the Factory Department debited, then Yarn Consumed would enter into these figures instead of Yarn Purchased.

We find that £9,500 worth has been bought for the Fashioned Department and £10,500 worth for the Seamless Department.

For the purpose of finding the correct percentage of Factory Overhead to Direct Productive Wages, it does not matter whether Purchases or Consumption is taken into these figures.

Item 2.—Dyeing. The Dyers' Accounts must be analysed into fashioned and seamless goods. There will almost certainly be a Dyers' Lot Book, from which these figures can readily be obtained.

Item 3.—Direct Factory Wages. The figure of wages in the Trading Account is £10,000, but this will probably include the wages of foremen, Factory office clerks, storeman, labourers, &c.

Only those wages which are paid for a necessary operation of normal production and which are definitely reckoned as Direct Wages in costing the dozen goods must come into this figure. All other wages must come in the Indirect Wages as an Overhead Expense, otherwise there will be a deficit not reckoned for when the Audited Accounts appear.

We find by analysis that the Direct Factory Wages are £8,000, of which £5,500 is paid to fashioned workers, and that £2,500 is paid in the Seamless Factory.

Item 4.—Paper, Boards, Boxes, Printing, Twine, &c. These are to be reckoned as direct items in costing the goods. If we

have our own Printing Department all these charges can go into the Printing Account, and be charged out to the different goods or departments. We find that £450 is consumed by the Fashioned Department and £550 by the Seamless.

Item 5.—Total of Direct Costs. This is of no immediate importance. It is simply the total of all those items which are to be reckoned as direct items in costing the goods. All the other items will come in the Overhead.

Item 6.—Indirect Wages. This includes all those wages which are not definitely treated as Direct Wages in costing the goods, and these Indirect Wages must be charged as an expense against the Department in which they are incurred.

If an employee works for more than one Department, a fair proportion must be allocated to each.

Item 7.—Salaries. These must be charged to the Departments which are supervised by the person in receipt of them. It should be possible to allocate this accurately.

Item 8.—National Health and Unemployment Insurance. This is that portion of the total insurance that is paid by the employer. That paid by the worker is deducted from his wages and appears as Wages in our Accounts. The division is ascertained from the Pay Roll.

Item 9.—Rent, Rates, &c. If the buildings are owned by the firm a fair rent should be charged, Lighting and Heating of Buildings, and the cost of Upkeep and Depreciation should be allocated on the basis of floor space.

Item 10.—Power. On the amount used, or, if this is not available, on the estimated horse-power required to drive each Department.

Item 11.—Repairs and Upkeep of Plant and Machinery, including needles and machine parts, can be definitely charged to the respective Departments.

Item 12.—Depreciation of Plant and Machinery will be the actual figure obtained from the schedule showing the capital value in each Department.

Item 13.—Insurance of Plant and Machinery will be calculated on capital values.

Item 14.—Insurance of Stock will be on the actual value of Material in Store, Work-in-Progress or goods in each Department.

Item 15.—Travellers' Salaries, Expenses and Commission on Sales are a purely Selling Expense, and go into the General Charges column to be eventually recovered on the turnover.

Item 16.—Sundry Expenses to the Department incurring them.

Item 17.—Directors' Fees into the General Expenses.

Item 18.—Discounts Allowed should be treated as a General Expense if it is not possible to render invoices net or to calculate them as direct items in estimating.

Item 19.—Carriage. This also could be treated as a General Expense or as a direct item in estimating. It is advisable to treat it as a General Expense in all cases where it is not possible to ascertain its exact cost at the time the Selling Price is fixed.

Item 20.—Total of Indirect Items. This is the total of all those expenses that have been incurred and which are not put down as definite items on the estimate or cost of a dozen goods.

It must be included in the Selling Price by a fair and equitable method, so that the profit shown on the individual estimates may be realised and eventually appear as Net Profit on the Balance Sheet.

The cost of the Overhead is found to be 60 per cent. to the Direct Wages of the Fashioned Hose Factory and 80 per cent. to the Direct Wages of the Seamless Hose Factory.

Item No.	Nature of Expenditure	Total	Factory Depts.		Warehouse Depts.		General Expenses
			Fashioned	Seamless	Fashioned	Seamless	
1	Yarn ..	£ 20,000	£ 9,500	£ 10,500	£ —	£ —	£ —
2	Dyeing ..	4,000	2,050	1,950	—	—	—
3	Direct Factory Wages ..	8,000	5,500	2,500	—	—	—
4	Paper, Boxes, &c. ..	1,000	450	550	—	—	—
5	Total of Direct Costs ..	£33,000	£17,500	£15,500	—	—	—
INDIRECT OR OVERHEAD COSTS.							
6	Indirect Wages ..	£ 2,000	£ 350	£ 250	£ 800	£ 600	£ —
7	Salaries ..	1,000	290	260	200	200	50
8	National Health and Unemployment Insurance ..	250	100	50	50	50	—
9	Rent, Rates, Taxes, Light and Heating ..	1,900	750	500	275	300	75
10	Power ..	1,000	600	400	—	—	—
11	Repairs and Upkeep of Plant ..	400	250	150	—	—	—
12	Depreciation of Plant ..	1,000	750	250	—	—	—
13	Insurance of Plant ..	80	50	30	—	—	—
14	Insurance of Stock ..	100	10	10	25	25	30
15	Travellers' Salaries and Commission ..	1,250	—	—	—	—	1,250
16	Sundry Expenses ..	300	150	100	25	25	—
17	Directors' Fees ..	250	—	—	—	—	250
18	Discounts Allowed ..	700	—	—	—	—	700
19	Carriage ..	250	—	—	—	—	250
20	Total of Indirect Costs ..	£10,480	£3,300	£2,000	£1,375	£1,200	£2,605
Cost of Overhead expressed as a Percentage or Rate ..		..	60 per cent. to Direct Factory Wages.	80 per cent. to Direct Factory Wages.	22,000 doz. disbursed Cost per dozen, 1s. 3d.	24,000 doz. disbursed Cost per dozen, 1s.	5½ per cent. to Sales deducting Discounts and Sales of Waste, 4½ per cent. to Sales.

This shows how necessary it is to departmentalise the expenses and make each Department recover its expenses on its own production.

In the Warehouse we find a cost of 1s. 3d. per dozen in the Fashioned Warehouse against 1s. per dozen in the Seamless Warehouse.

The General Expenses are £2,605, or $5\frac{3}{4}$ per cent. to the Sales, **but there are Sundry Receipts and Discounts Received** to the extent of £600, which can be used to relieve the General Expenses. This would make them £2,005, or $4\frac{1}{2}$ per cent. to sales.

CHAPTER IV.

DEPARTMENTAL ACCOUNTS.

We are now in a position to draw up our Departmental Accounts, which will show the actual performance of the respective Departments.

These Departmental Accounts show that the Fashioned Department has made a profit of £2,513, and that the Seamless Department has lost to the extent of £993, the difference between the two Departments being the figure of profit shown on the audited accounts of £1,520.

In nearly all businesses some Departments will make a profit and others may show a loss, but the General Trading and Profit and Loss Account will seldom give any idea as to where the final figure of profit or loss is made.

It is therefore essential, under modern conditions of manufacturing, that the directors responsible for the success of a business should have access to the full information of the actual performance of each section of the business.

This information cannot be obtained by the ordinary methods of accountancy, but must come through that special branch of accountancy which deals with Cost and Works Accounts.

FASHIONED HOSE DEPARTMENTAL ACCOUNT.

				£	By Stock on Hand ..	£
To Stock on Hand				3,000	..	1,400
To Direct Items:—						
Yarn .. ..	..	..	..	9,500	..	27,500
Dyeing .. ..	..	..	..	2,050		
Direct Factory Wages	..	..	..	5,500		
Paper, Printing, Boxes, &c. ..	..	..	..	450		
To Balance carried down	..	..	..	8,400		
				£28,900		£28,900
Indirect Items				Factory	Ware-house	Total
To Indirect Wages .. ..	..	..	..	£ 350	£ 800	£ 1,150
Salaries .. ..	..	..	..	290	200	490
National Health and Unemployment Insurance .. ..	..	..	..	100	50	150
Rent, Rates, &c. .. ..	..	..	..	750	275	1,025
Power .. ..	..	..	..	600	—	600
Repairs to Plant .. ..	..	..	..	250	—	250
Depreciation of Plant .. ..	..	..	..	750	—	750
Insurance of Plant .. ..	..	..	..	50	—	50
Insurance of Stock .. ..	..	..	..	10	25	35
Sundry Expenses .. ..	..	..	..	150	25	175
To Proportion of General Expenses transferred from the General Expenses Account .. ..	..	..	..	—	—	1,212
To Net Profit on Department .. ..	..	..	..	—	—	2,513
				£3,300	£1,375	£4,675
						£8,400
					By Balance brought down ..	£ 8,400
						£8,400

Factory Expenses are 60 per cent. on the Direct Factory Wages. Warehouse Expenses are 1s. 3d. per dozen goods. General Expenses are 4½ per cent. to the Total Sales.

SEAMLESS HOSE DEPARTMENTAL ACCOUNT.

To Stock on Hand	..	..	..	..	£	By Stock on Hand ..	£
To Direct Items :—					2,000	..	2,500
Yarn ..	..	..	..	..	10,500	..	18,000
Dyeing ..	..	..	..	..	1,950		
Direct Factory Wages	..	..	..	..	2,500		
Paper, Printing, Boxes, &c..	..	..	..	..	550		
To Balance carried down	..	..	..	..	3,000		
					£20,500		£20,500
<hr/>							
Indirect Items				Factory	Ware-house	Total	
To Indirect Wages	..	..	..	£250	£600	£850	£3,000
Salaries	..	..	..	250	200	450	
National Health and Unemployment Insurance	..	..	..	50	50	100	
Rent, Rates, &c. ..	..	..	..	500	300	800	
Power ..	..	..	..	400	—	400	
Repairs to Plant ..	..	..	..	150	—	150	
Depreciation of Plant	..	..	..	250	—	250	
Insurance of Plant	..	..	..	30	—	30	
Insurance of Stock	..	..	..	10	25	35	
Sundry Expenses ..	..	..	..	100	25	125	
To Proportion of General Expenses transferred from the General Expenses Account				—	—	793	993
				£2,000	£1,200	£3,993	£3,993

Factory Expenses are 80 per cent. on the Direct Factory Wages. Warehouse Expenses are 1s. per dozen goods.
General Expenses are 4½ per cent. to the Total Sales.

Let us now carry the matter a stage further and put our Departmental Accounts in a similar order to that on which we cost a dozen goods.

							£
Yarn	..	..	..	..	..	..	9,500
Direct Factory Wages	..	..	..	..	..	..	5,500
Factory Expenses, 60 per cent.	..	..	..	..	..	..	3,300
Dyeing	..	..	..	..	..	..	2,050
Warehouse Expenses at 1s. 3d.	..	..	..	..	..	..	1,375
Paper, Boxes, &c.	..	..	..	..	..	..	450
General Expenses, 4½ per cent. on Sale Price	..	..	..	..	..	..	1,212
							<hr/>
Total Cost	..	..	..	..	..	..	23,387
Add Stocks Sold	..	..	..	..	..	..	1,600
Profit	..	..	..	..	..	..	2,513
							<hr/>
Total Sales	..	..	..	..	..	..	£27,500

SEAMLESS DEPARTMENT.

	£
Yarn	10,500
Direct Factory Wages	2,500
Factory Expenses, 80 per cent.	2,000
Dyeing	1,950
Warehouse Expenses at 1s.	1,200
Paper, Boxes, &c.	550
General Expenses $4\frac{1}{2}$ per cent. on Sale Price	793
Total Cost	<u>19,493</u>
Loss	993
Sales	18,000
Add Goods to Stock	<u>500</u>
Total	<u>£19,493</u>

It will now be understood that the General Account shows the cost of all goods in bulk, and that the Departmental Accounts reveal the cost of the goods produced by the respective Departments in bulk.

By costing each line of goods on the Estimate Form we maintain the sequence, and can correctly cover all our Overhead Expenses and ascertain which of these goods are made at a profit and which are losing money.

CHAPTER V.

ESTIMATING.

It is necessary to fix the Selling Price of a line of goods long before they are manufactured and ready for delivery. Very often it is necessary to give a price in competition with other houses, and it is therefore necessary to prepare an estimate of the cost in order to ascertain whether the goods can be produced at the figure and allow a margin of profit sufficient to warrant the accepting of the order.

Very often also questions of policy arise where it may be suggested, in order to keep the plant running, that certain lines may be produced and sold at a low figure, and in these circumstances it is also necessary to prepare an estimate of the cost of the goods.

Estimating is not costing, for estimates are compiled in advance, whereas cost records are compiled during the process of manufacture.

The Cost Records will show whether there has been accuracy in estimating, whether the allowances for waste and loss on seconds is sufficient, and whether the percentage of Factory Expense remains at or exceeds the allowed percentage in estimating.

The Cost Records provide valuable aid to the accuracy of estimates and enable them to be prepared in a reliable manner.

In the cost of a dozen goods the price per pound to be paid for the yarn is known, but the amount of waste made in knitting is only known after the process has been completed.

Through the Cost Accounts the amount of waste on similar goods is known, also the average amount of waste for the previous periods, and on the line of goods to be estimated an allowance, based on past experience, must be made. One unknown factor is the loss on seconds and jobs, and this can only be ascertained after the manufacturing has been completed. In order to know this amount it is necessary to keep a record of seconds sold and the difference between the price realised and the price of firsts is the loss that has been incurred.

An allowance based on past records must be made on the estimate, so that this loss is not a deficit, and that the estimated profit, assuming that the other unknown items remain normal may be realised.

If the Overhead Expenses amounted to 60 per cent. of the Direct Factory Wages last year there is no guarantee that they will be the same in the current period, but, if this is the normal percentage, it must be taken as the basis of estimating, and by means of the Cost Accounts it must be watched so that these expenses do not exceed the amount allowed.

The estimates should be prepared in line with the Departmental Accounts, and there should be means of comparison with the actual cost as the goods are completed.

Upon the accuracy of the estimating much depends, for if goods are sold at a figure below their true cost there will eventually be a deficit at the end of the year.

ESTIMATE FOR 1 DOZ. SEAMLESS HOSE.19....

Description....L 654.....Mercerised Cotton Hose.....

.....Mock Seam.....

Weight of 1 Doz. Goods in Rough.....1 lb.....8 oz.

Details	Estimated Cost
YARN, including Allowance for Waste :—	£ s d
.....2/60 1 lb. 8 oz. @ 7s.	: 10 : 6
.....2/100 1 lb. 2 oz. @ 8s. 8d.	: 1 : 1
..... 1 lb... oz. @	: : :
Total Weight and Cost 1 lb. 10 oz.	£ : 11 : 7
DIRECT FACTORY WAGES :—	
Winding Yarn for 1 Doz. Goods	£ : : 1½
Knitting	: : 3
Welting	: : 2
Linking	: : 1½
Seaming	: : 2
Mending	: : 2
Inspecting	: : :
Total Direct Factory Wages.. ..	: 1 : 0
Bonus @ 8d. in the 1s.	: : 8
Factory Overhead Expenses 80% to Factory Wages ..	£ : 1 : 8
	£ : 1 : 4
Total Cost to Rough Stock.. ..	£ : 14 : 7
Dyeing	£ : 2 : 0
Warehouse Wages and Expenses @ 1s. per Dozen ..	£ : 1 : 0
Paper, Boards, Boxes, Printing, &c.	£ : : 5
Total Manufacturing Cost	£ : 18 : 0
General Expenses 5% on Sale Price	£ : : 11
Estimated Loss on Seconds	£ : : 11
Estimated Profit	£ : 1 : 2
Sale Price	£ 1 : 1 : 0

It will be the duty of the Cost Accounts to see that the goods are produced at the figure allowed, or to reveal the loss thereby incurred.

Given correct allowances for waste, loss on seconds and normal production and expenses, these estimates would be true costs. If these estimates are true costs then the profit shown by the total of all the estimated costs of all goods produced should be the Trading Account figure of profit.

CHAPTER VI.

THE FACTORY SYSTEM.

YARN.

One of the greatest difficulties and the greatest danger in a Hosiery Factory is the yarn. This, if not properly controlled and undue wastage eliminated, can affect the profits of the business to a very serious extent. In fact, I think that I am safe in saying that it is the most important factor for any undue increase in the cost of yarn, in the wastage or loss incurred by putting a greater weight into the goods than is allowed for in the selling price must necessarily result in a loss on manufacturing.

Yarn, when purchased, should be tested for count and standard requirements, and should be carefully checked to see that the weight invoiced, apart from the weight of cones, &c., is correct, and should be taken into store.

If necessary, it can be allocated in the Ledger to the Fashioned or Seamless Departments for the purpose of the Departmental Accounts, but it must be regarded as going into store and be charged to Yarn Store Account.

When an order is received the factory will advise the yarn storeman that a certain amount of yarn is required, the

YARN ISSUED FROM STORES. No. 345.

Date.....192

	Date	No. 345 A	Winder	Gross	Weight Cones	Net	Rate
For Order No.....	Date	No. 345 B	Winder	Gross	Weight Cones	Net	Rate
Description of Yarn.....	Date	No. 345 C	Winder	Gross	Weight Cones	Net	Rate
Spinner	Date	No. 345 D	Winder	Gross	Weight Cones	Net	Rate
Weight required for Order ....lb.	Date	No. 345 E	Winder	Gross	Weight Cones	Net	Rate
Skep No.	Date	No. 345 F	Winder	Gross	Weight Cones	Net	Rate
Weight of Skep.....lb.	Date	No. 345 G	Winder	Gross	Weight Cones	Net	Rate
Weight of Cones.....lb.	Date	No. 345 H	Winder	Gross	Weight Cones	Net	Rate
Net Weight of Yarn.....lb.	Date	No. 345 I	Winder	Gross	Weight Cones	Net	Rate
Price of Yarn.....per lb.	Date	No. 345 K	Winder	Gross	Weight Cones	Net	Rate
Price paid to Winders.....d. per lb.	Date						
Yarn returned to Store.....lb.	Date						
Total Net Weight Issued....lb.	Date						
Total Value of Yarn Issued	Date						
£ : :							

weight being arrived at by multiplying the number of dozens to be made by the weight of yarn allowed for in estimating, including the allowance for waste.

This yarn will not be issued by the storeman in bulk to the factory, but to each winder as it is required to be wound. If, as is usual in many factories, the yarn storeman is responsible for the supervision of the winding operatives, he will issue a skep of yarn and enter it in the Yarn Issued Book.

This book is in duplicate with a carbon copy underneath, and as the yarn is weighed out in small lots to the winders, the storeman will complete the Ticket A which is perforated to tear off and given to the winder with the yarn.

On issuing a second quantity of yarn he will issue Ticket B, and so on until all the yarn necessary to complete the order has been issued.

The winders will retain these tickets, and at the end of the pay period will render a Winder's Wages Sheet to the office. This Winder's Wages Sheet is checked with the duplicate remaining in the Yarn Issued Book, and the wages are then entered on the Pay Roll.

By this means there is a definite check that wages are only paid for work actually performed, and also that the weight of yarn paid for winding agrees with the yarn issued in total.

On the completion of the winding of the skep or of that portion of the skep which is to be issued in accordance with the weight of yarn required to complete the order, the storeman will complete that part of the form remaining in the book and send it to the Cost Office for entry of yarn issued and winding wages paid to the Cost Sheet.

No Hosiery Factory can be successful unless it has efficient control over its yarn. No Hosiery Factory can be efficient unless it has a system of handling yarn that will prevent undue

waste and loss, which is always one of the most dangerous and elusive of problems.

If yarn is so controlled that only the net amount required to complete the order is issued to the factory the goods should come through, provided that the allowance for waste on the estimates is sufficient. If more goods come through than the quantity expected, then either the allowance for waste is too high or some unexpected good fortune has been experienced in the factory, provided that the estimated standard weight per dozen goods has been maintained.

How to manufacture with a minimum of waste and to make sure that wages are only paid for actual value received in production is one of the most pressing problems that confront the manufacturer.

Herein lies the secret of good manufacturing, and the neglect of this means the loss of all the profit anticipated on the estimates and can very soon turn a prosperous business into a losing concern.

The manager who believes in pushing the yarn into the factory, giving the employees therein a gold-mine to play with, is seeking trouble.

If it is necessary to keep cash securely locked up against wasted expenditure, it is much more necessary to keep control of the vast amount of cash in the form of yarn.

Only by the efficient control of this material will it be certain that the financial result will not be adversely affected.

CHAPTER VII.

THE FACTORY SYSTEM.

KNITTING.

The system of recording production, ascertaining wages, and controlling the movement of goods from one process or operation to another should be such as eliminates all unnecessary clerical work, guarantees that wages are only paid for work actually done, minimises the handling and hanging about of the goods in an unfinished state, and releases the foreman from his desk so that he may pay full attention to the actual manufacturing.

It is very often found that the Factory or Works Records are very inefficiently kept, that they are considered a necessary evil and hindrance to output, and that they do not link up with the accounts of the business.

It is essential that these records, which are of real importance and great value, should be correct. There should be a definite system laid down and followed that will fit in with the general system of the business, in order not only to provide reliable information for the Factory Manager with regard to the progress of orders on hand, but also be of value to and minimise the clerical work of the Counting House.

LOT TICKET. No.....345....

This Ticket to be attached to each Lot as made by the Legger. Each employee completing any operation will tear off the appropriate Ticket for the operation performed and this will be retained and entered on the Weekly Wages Sheet. The Employee must fill in their name and date in the space provided on the top half of the Form.

Description of Goods

Quality of Yarn

Quantity.....dozs.....prs. Size.....in.

Operation	Leg- ger	Heels	Foot- ing	Toes	Seam- ing	Men- der	Quantity	
Name	Firsts	Sec'ds
Date

Date sent to Dye..... *Warehouse Lot No*....

Lot No.			
345	Mender ....	....doz....prs.	Wages rate per doz.....d.
345	Seamer ..	....doz....prs.	Wages rate per doz.....d.
345	Turn off Toes	....doz....prs.	Wages rate per doz.....d.
345	Footer ..	....doz....prs.	Wages rate per doz.....d.
345	Turn off Heels	....doz....prs.	Wages rate per doz.....d.
345	Legger ..	....doz....prs.	Wages rate per doz.....d.

FACTORY LOT BOOK. (Left-hand side of Book.)

PRODUCTION OF ORDER NO.....

Date	Lot No.	Quantity Doz. Prs.	Size	Operations and Wages Rates					
				..... Logger	..... T. off H.	..... Footer	..... T. off T.	..... Seaming	..... Mending
.....
.....
.....
.....

FACTORY LOT BOOK.—(Continued). (Right-hand side of Book).

Goods to Rough Stock			Goods to Dye		Remarks
Firsts Doz. Prs.	Seconds Doz. Prs.	Weight lb. oz.	Date	Warehouse Lot No.	
.....
.....
.....
.....

MENDERS' WAGES SHEET AND RECORD OF GOODS TO
ROUGH STOCK.

Name.....
No. on Pay Roll..... Date.....19..
Goods Mended and Inspected and passed to Rough Stock.

[illegible]

SUMMARY	.....doz.	.....prs.	@.....	£	:	:
	.....doz.	.....prs.	@.....	£	:	:
	.....doz.	.....prs.	@.....	£	:	:
Total	..	..	..	..	£	:
Add Bonus @	....d. in the	rs.	..	..	£	:
Total Wages Earned	..	..	..	£	:	:

Entered on Pay Roll.....
Entered in Lot Book.....

When an order is received to make a certain line of goods a definite order should be placed with the factory.

It is not possible to efficiently run any Department in any business if the Department is allowed to make goods without definite orders. It encourages waste and slackness. To keep Factory Records in a rough-and-ready manner also encourages inefficiency and waste.

Whether goods are required for a definite order or for stock a Factory Order Sheet should be issued.

This Order Sheet should contain full particulars of quantity to be made of each size, yarn to be used, wages rates to be paid for each operation, and the weight the goods are to come out at in rough, and any other instructions which may be necessary to carry the order through without a hitch.

It should also contain spaces for filling in the total quantity made of each size and the amount of yarn issued to the winders for this order. This would be obtained from the Yarn Issued Book. Eventually, we should get the weight of these goods delivered to rough stock, and so find the loss due to waste and its percentage to yarn issued.

On receipt of this order the factory will enter it in the factory Lot Book, this book being on the loose-leaf principle, allowing a sufficient number of pages to divide the order into a suitable number of lots, convenient to handle and control.

A lot number should be given to all lots made by the legger, and Lot Ticket issued for same.

This Lot Ticket will go round with the goods, and should contain all necessary instructions. It will show the quantity in the lot and the price paid for each operation to be performed.

As each worker completes an operation he will detach that portion of the Lot Ticket which refers to the work done and

retain same, entering his name and date in the space provided on the top half of the ticket.

A summary of all these detached portions will be made weekly by the employee on a Wages Sheet, and handed in to the Factory Office. This will be entered to the Lot Book and passed to the Counting House to be entered on the Pay Roll.

The menders who perform the final operation to the goods before they are taken into rough stock will be required to compile their Wages Sheet in a form suitable to record particulars of firsts and seconds and the weight of each lot. These will be entered into the Lot Book before being passed to the Counting House for incorporation in the Pay Roll.

By this means the clerical work in the Factory Office is brought down to a minimum, the foreman is able to devote his time to the supervision of the manufacturing, the Lot Book shows exactly how each lot stands, and there is an absolute guarantee that the wages as paid are Direct Productive Wages which have gone into the goods, that the goods are there, eventually to go to dye and be sold, or will count in stock at a stocktaking.

CHAPTER VIII.

THE WAREHOUSE SYSTEM.

Having now completed the manufacture up to the rough or undyed stage, we have a definite break and can pass the goods into store. The man in charge of this rough stock should keep a Rough Stock Book, showing the quantities he has received from the factory and the quantities he has issued, the balance being the Stock on Hand at any time.

The top portion of the Factory Lot Ticket should continue to be attached to the goods as long as they remain in the rough stock, for this contains full information relating to the goods and their identity is secured thereby.

When the goods go out of stock this ticket is no longer required and should be removed from the goods, but it should be retained until such time as the goods have passed through the warehouse, for defects may come to light after dyeing that could not be discovered in the rough.

When instructions are received for dyeing the Stockkeeper must enter them in the Goods to Dye Book, giving each lot a Dyer's Lot Number. Several Factory Lots may enter into one Dyer's Lot Number, but the Factory Lot Numbers should be entered for the purpose of record.

ROUGH STOCK BOOK.

[illegible][illegible]

WAREHOUSE LOT BOOK.

Date	Warehouse Lot No.	Quantity Doz. Prs.	Size	Description	Dyer	Instructions Colour Finish	Weight lb. oz.	Received from Dye Date Doz. Prs.
.....
.....
.....
.....
.....
.....

(Left-hand side of Book.)

Shortage and Damages Debited to Dyer	Dyer's Account Checked	Operations Performed				Delivery Instructions	Delivered To Customer Doz. Prs.	To Stock Doz. Prs.
		Mend.	Stamp.	Pairing	Folding	Boxing		
.....
.....
.....
.....
.....

(Right-hand side of Book.)

This Goods to Dye Book should be in triplicate, the first copy going to the dyer with the goods, the second to the Warehouse, and the third should be retained in the book.

On receiving this Goods to Dye Sheet from the Factory, the Warehouse Department should enter it into a Warehouse Lot Book, retaining the Dyer's Lot Number, which now becomes the Warehouse Lot Number.

When the goods come back from dye, they should be checked and a claim made upon the dyer for any shortage or damaged goods. The dyer's invoice should be checked with this book, either by a responsible person in the warehouse or by the counting house staff before the account is passed for payment.

A Warehouse Lot Ticket, similar to that used by the factory, should be attached to each lot when received from dye, and the necessary operations performed, the employees rendering a Wages Sheet to the office, similar to the Wages Sheet rendered by the employees in the factory.

On the completion of the warehouse operations, the goods may be delivered direct to the customer or go into finished stock.

In either case the Warehouse Department should enter the goods into a Rough Invoice Book, one book being kept for Sales to Customers and another for Sales to Stock.

By this means the warehouse is kept clear of accumulated lots and oddments, every dozen goods received from dye being accounted for.

The stockkeeper in charge of the finished stock will keep a Stock Book on the lines of that kept by the person in charge of the rough stock, showing the receipts, issues and balance on hand at any time.

When goods are delivered from finished stock they will be entered in a Rough Invoice Book by the stockkeeper. By this means there is a record in the counting house of the total quantities and value in the stockroom, and the stockkeeper must produce this quantity at a stocktaking.

CHAPTER IX.

THE COUNTING HOUSE SYSTEM.

WAGES, PURCHASES AND SALES.

It is wrong to look upon the Counting House as a purely recording institution, although in many cases it is merely this. The really efficient Counting House, properly organised and controlled, will take its place as a most valuable and important unit in the scheme of business organisation and management.

An efficient Counting House can very materially affect the financial results, a live Counting House can save much money and considerably aid the factory in producing for profit.

The principal books required are :—

- Pay Roll.
- Purchase Day Books.
- Sales Day Books.
- Bought Ledger.
- Sold Ledger.
- Cash Book.
- Nominal or Private Ledger.

The important consideration is not so much the number of books as the way in which they are kept, and the information that can be obtained from them. The Counting House books are a valuable store of most important information. If this information is not available the Counting House is inefficient.

It is not possible for Departmental Accounts to be combined with the General Accounts in a double-entry set of books without unduly disturbing the General Accounts of the business, and as the accounts for the business as a whole are the official accounts for all purposes it is essential that they should not be destroyed by endeavouring to combine the Departmental Accounts with them as one set of accounts.

The only satisfactory solution is to keep the Nominal Ledger on the loose-leaf system, and by using the left-hand side of the opening as an ordinary account complete in itself for the purpose of the General Account, utilise the right-hand side of the opening as an analysis into the required Departments.

Under this arrangement the departmental side of the Nominal Ledger does not enter into the audit or disturb the general system of book-keeping, but it makes available a host of detail necessary for compiling the Departmental Accounts.

The Counting House should compile the Pay Roll from the Factory and Warehouse Wages Sheets after these have been checked and passed by the Departments concerned.

On this Pay Roll they should enter the quantity of goods made in the factory, the leggers' quantity being taken for the Fashioned Factory and the maker's quantity for the Seamless.

If each section of the factory is entered on a separate sheet, the total paid for each operation can be ascertained, and a summary made showing the quantity of goods produced, the total of the wages, and the employer's contribution to the National Health and Unemployment Insurance.

The Indirect Wages are summarised from the Wages Sheets rendered by the pieceworkers in the Warehouse and from the time clock in the case of timeworkers.

If an employee normally engaged on an operation which is treated as Direct Factory Wages is given an allowance or is

YARN PURCHASES BOOK

.....19....

Date	Invoice No.	Bought of	Description Count and Quality	Weight lb. oz.	Price	Ledger Folio	Amount of Invoice £ s d	Returns and Allowances £ s d
.....
.....
.....
.....
.....

(Left-hand side of Book.)

Allocation	Fashioned Department lb oz £ s d	Seamless Department lb oz £ s d	Cones and Cases Dr. Cr.
.....
.....
.....
.....
.....

(Right-hand side of Book.)

DYEING PURCHASES.

.....19....

Date	Invoice No.	Dyer	Bought Ledger Folio	Amount of Invoice £ s d	Shortages and Damages Debited to Dyer £ s d	Dyeing Fashioned Department Doz. Prs. £ s d
.....
.....
.....
.....

(Left-hand side of Book.)

Dyeing Seamless Department		Shortages and Damages Debited to Dyer			
Doz	Prs.	Fashioned Department		Seamless Department	
		£	s d	Doz. Prs.	£ s d
.....
.....
.....
.....
.....

(Right-hand side of Book.)

GENERAL PURCHASES BOOK.

.....19....

ANALYSIS

Date	Invoice No.	Bought of	Description	Bought Ledger Folio	Amount of Invoice £ s d	Returns and Allowances £ s d	Capital
.....
.....
.....
.....

(Left-hand side of Book.)

OF PURCHASES.

Direct Materials	Paper, Printing, Boxes	Workmen's Compen- sation Insurance	Rent, Rates, Taxes	Light	Fire Insurance	Repairs to Buildings	Power	Repairs and Upkeep Machinery	Other Expenses
.....
.....
.....
.....

(Right-hand side of Book.)

partly engaged on work which is treated as indirect, then this portion of the wages will be entered on the Indirect Pay Roll, only the Direct Wages being posted to the Direct Pay Roll.

Yarn purchased, after being checked by the yarn storeman as correct for count, quality and weight, should be entered in the Yarn Purchases Book, the left-hand side of the book being drawn up in a manner suitable for the General Accounts and the right-hand side for an analysis of the weight and value purchased for the different Departments.

Cones and cases should not enter into the weight and value of yarn allocated to Departments, because these are returnable, and the Cones and Cases Account should clear itself on the return to the spinner.

Dyeing charges are to be checked with the Warehouse Lot Book and any shortages or dyers' damages charged up to the dyer. The Dyeing Purchases Book should be analysed into Departments for the purpose of Departmental Accounts.

The General Purchases Book should take all credit purchases other than yarns and dyeing, and the analysis of this book will give the expenditure incurred under the headings of the accounts in the Nominal Ledger. Where possible, these items of expenditure should be marked with the name of the Department incurring them, and an analysis made for posting to the Departmental side of the Nominal Ledger.

It will be necessary to keep the goods sold by Departments direct separate from goods sold out of the finished stock, because in our Cost Accounts we shall give credit to the Departments when they send the goods to stock and debit a Finished Stock Account, crediting the finished stock when the goods come out of stock.

There should, therefore, be two Sales Day Books, one taking sales from Departments and the other sales from stock.

CHAPTER X.

THE NOMINAL LEDGER AND CONTROL ACCOUNTS.

The accounts in the Nominal Ledger should be the same as will eventually appear on the audited Trading and Profit and Loss Accounts, and may comprise the following :—

CAPITAL ACCOUNTS.—Share Capital, Buildings, Plant and Machinery, Fixtures, Shafting.

CONTROL ACCOUNTS.—Stock on Hand, Cash, Bank, Bought Ledger Control Account, Sold Ledger Control Account.

SALES AND RECEIPTS.—Sales by Departments, Sales from Stock, Sales of Waste and Sundries, Discounts Received.

DIRECT ITEMS.—Direct Factory Wages, Direct Outworkers' Wages, Dyeing, Yarn, Materials, Paper, Boxes, Printing, &c.

INDIRECT ITEMS.—Indirect Wages in Factory and Warehouse, Salaries, National Health Insurance, Unemployment Insurance, Workmen's Compensation Insurance, Rent, or Interest on the Buildings if owned by the Business, Rates and Taxes, Lighting, Repairs to Buildings, Depreciation of Buildings, Fire Insurance, Power, Repairs and Upkeep of Plant and Machinery, including Needles and Parts, Depreciation of Plant and Machinery, &c., Departmental Expenses, General Expenses,

Carriage, Donations, Travellers' Salaries and Expenses, Commission on Sales, Directors' Fees, Discounts Allowed.

The posting to the Nominal Ledger will be from the Sales Day Books, Purchases Books or the Cash Book, excepting rent, if the buildings are owned by the business, and depreciation of plant and machinery and buildings, which are internal entries.

The Control Accounts will show the balance of the Bought Ledger, Sold Ledger, Cash in Hand and at Bank. Outstanding cheques will reconcile the balance as shown by this account with the Bank Pass Book.

We are therefore in a position to take out a Trial Balance without reference to any book other than this Nominal Ledger.

A Trial Balance should be taken out monthly. It proves the accuracy of the books and is a valuable check upon expenditure, for it is possible to draw up Monthly Accounts for the business after making the necessary reserves provided that the value of stock on hand is known.

To know stocks it is necessary to know the production of the works and the consumption of the stores. With the help of Cost Accountancy and an efficient counting house we can know our stocks. Knowing our stocks it is possible to know the exact financial position of the business at any moment.

BOUGHT LEDGER CONTROL ACCOUNT.

Cash Paid £ : :	Balance brought forward .. £ : :
Discounts Received £ : :	Purchases—Yarn .. £ : :
Balance carried down £ : :	Dyeing .. £ : :
	General .. £ : :
<u>£ : :</u>	<u>£ : :</u>
	Balance brought down £ : :

SOLD LEDGER CONTROL ACCOUNT.

Balance brought forward .. £ : :	Cash Received .. £ : :
Sales £ : :	Discounts Allowed .. £ : :
	Balance carried down £ : :
<u>£ : :</u>	<u>£ : :</u>
Balance brought down £ : :	

BANK ACCOUNT.

Balance brought forward .. £ : :	Payments £ : :
Receipts £ : :	Balance carried down £ : :
<u>£ : :</u>	<u>£ : :</u>
Balance brought down £ : :	

NOMINAL LEDGER. ACCOUNT.

Date	Fo.	£ s d	Date	Fo.	£ s d
.....
.....
.....
.....
.....
.....
.....
.....
.....

(Left-hand side of Book.)

DEPARTMENTAL ANALYSIS.

Fashioned Department Quantity £ s d	Seamless Department Quantity £ s d	..... Department Quantity £ s d	..... Department Quantity £ s d
.....
.....
.....
.....
.....
.....
.....
.....
.....

(Right-hand side of Book.)

CHAPTER XI.

QUANTITIES IN THE COST ACCOUNTS.

In preparing the Final Accounts it is essential that an inventory of the stock on hand should be taken. Usually this is done in a haphazard manner.

If the result of the year's trading is expected to turn out well the stock will often be loosely taken and written down in value. If the result is not expected to prove satisfactory, then every effort is made to account for every item possible, and the valuing of the stocks is done with a view to make them show as favourable as possible.

This is so open to fraud, and there is so much room for differences of opinion on the value of the stocks, that the accountant conducting the audit always takes a certificate of the accuracy of the stocks from a responsible member of the staff, and, in submitting the accounts, states that the stocks are taken and certified by the company.

Under an efficient system of Cost Accountancy we should take stock to see that we actually have what the Cost Accounts show should be on the premises, for one of the objects of Cost Accounts is to control the stores and the stocks of partly manufactured and finished goods.

From the inventory of the previous period we can ascertain the opening stocks in both quantity and value, and if we started with an opening stock of yarn in the yarn store of 1,000 lb. and have purchased 10,000 lbs. weight, as shown by the Yarn Purchase Book and the Yarn Account in the Nominal Ledger, we should have 11,000 lbs. weight in hand, provided that none had been issued.

From the Yarn Issued from Stores Book we find that we have given out of stores and have debited factory orders or work-in-progress with a total of 9,500 lbs. We should have remaining in stock a total weight of 1,500 lbs., and this figure should come forward at the actual stocktaking.

We may have an opening stock of 1,500 dozen of hose in the factory, some with the legs only made, others in the various stages, and from the Direct Factory Wages Account in the Nominal Ledger we find that the leggers have been paid for making 14,000 dozen. This figure of production should be entered from the Weekly Pay Roll. From the same Account we find that the menders have passed 13,750 dozens to rough stock; therefore, 1,750 dozen pairs remain in an incomplete state in the factory to be accounted for at a stocktaking. If only 1,700 dozen come forward on the Stock Book, then the 50 dozen pairs lost should be accounted for in the Factory Lot Book.

Goods in rough stock may show an opening stock of 2,000 dozens, to which is to be added the goods received from the factory, namely, 13,750 dozens, making a total of 15,750 dozen. The total of goods sent to dye, as shown by the Goods to Dye Book, or the Warehouse Lot Book, is 14,500 dozen, the balance remaining in the rough stock, therefore, should be 1,250 dozens.

These 14,500 sent to dye have to be accounted for by the warehouse, and if there was an opening stock of 1,000 dozens,

they must account for 15,500 dozens, either sold to customers or to finished stock, charged up to dyers for damages and shortage or remaining in the Department.

In the same manner the finished stock will be debited with the goods received from the warehouse, and will be credited with the goods sold from stock, the balance should be stock on hand.

All these figures of quantity should come through to the Counting House, and be incorporated in the Nominal Ledger on the Departmental Analysis side.

It will be seen, therefore, that there is a definite check upon the quantities in the various stages of manufacture, and any loss can be detected and traced to the section responsible, the principle of the lot number in the factory and the warehouse enabling each lot to be traced from start to finish and any loss located on the individual goods.

CHAPTER XII.

VALUES IN THE COST ACCOUNTS.

If a man has ten golden sovereigns and exchanges them for a ten-pound note, he has still the same amount of cash. If he transfers ten pounds from his Current Account to his Deposit Account he is still in the same financial position.

In business the purchase of raw material for stores is not an expense, it is only an exchange of equal assets. Whether you have material in the store or cash in the bank does not matter (providing, of course, that the value of the material remains the same), for the Trading Account is not affected until the item is consumed.

When yarn is issued from stores to the factory for knitting into goods there is an exchange of equal assets between yarn store and work in progress.

In the same way wages are paid for knitting which are directly productive, and enhance the value of the goods in process by the amount of Direct Factory Wages paid, so that we have again an exchange of equal assets, cash paid for these wages becoming value in the Work-in-Progress Account.

If the expenses of the factory which are calculated on the estimates at 60 per cent. remain in this proportion to the

Direct Factory Wages, there again is an exchange of equal assets, for these expenses enhance the value of the work in progress by this amount.

If the percentage of expenses to Direct Factory Wages varies we have to adjust this difference, which will be done by means of the Expense Adjustment Account.

This principle of the exchange of equal assets will be of great value to us, and help us to understand the underlying principles of Cost Accountancy as applied to the Hosiery Industry.

That portion of the original Yarn Issued Sheet remaining in the book after the yarn has been wound is completed by the Yarn Storeman and sent to the Cost Office, where the total of these records is credited to Yarn Store and debited to the various Factory Orders. Our Yarn Store Account therefore is :—

YARN STORE ACCOUNT.

Opening Stock	..	£500	Issued to Factory Orders	£7,800
Purchases	..	8,000	Balance being Stock on	
			Hand	700
		<u>£8,500</u>		<u>£8,500</u>

and from this account we know what the total value of yarn in store should amount to.

The yarn issued should be entered on the Cost Sheet and particulars of goods made, and passed to rough stock, also entered in the space provided. This information will be obtained from the Factory Lot Book, or from the Nominal Ledger, as entered from the Menders' Wages Sheets to the Pay Roll.

On the completion of the Factory Order we find that the amount of yarn issued and used up in goods or lost in waste is the amount reckoned on the estimate, for yarn is only issued on this basis, and should produce the goods.

If we have issued yarn for 1,000 dozens at an estimated weight of 2 lb. 2 oz. per dozen the yarn store will have *issued* 2,125 *lbs.* of yarn, as now shown on the Cost Sheet. If the total cost of this yarn is £500, and 1,042 dozens have been made and passed to rough stock, then the yarn cost per dozen is 9s. 9d., against the estimated cost of 10s.

If the cost works out at a less price than that reckoned in the estimate, it necessarily follows that the profit shown on the estimate is understated by the amount saved ; therefore, we compile an actual cost against the estimated cost, ascertaining the actual cost and maintaining the principle of the exchange of equal assets.

The actual Direct Factory Wages paid should not vary from the amount estimated per dozen, but if it does, the corrected figure should be placed in the actual cost column, so that the Cost Sheet will show the true cost. The total Direct Factory Wages paid and the Factory Overhead Expenses at the agreed percentage will also have been exchanged into work-in-progress.

We now arrive at the cost to rough stock, and if the rough stock is valued at this figure at a stocktaking, we have a value that exactly balances our cost up to this point after adjusting the difference in the actual cost of the factory overhead against the amount recovered by the percentage allowed. The Expense Adjustment Account will give this figure.

On the goods going to dye and being completed and sold, the actual dyeing charges can be entered on the Cost Sheet, if the actual dyeing figure is 2s. 1d. against an estimated figure

of 2s. 3d., it is evident that there is an additional 2d. profit beyond that stated on the estimate.

Completing the Cost Sheet, allowing the warehouse cost per dozen to remain at the estimated figure of 1s. 3d., which is the ascertained average cost of the previous period, any difference in this being adjusted by the Expense Adjustment Account, we find that the total cost of manufacturing apart from general and selling expenses which are calculated on the sale price is £1 2s. per dozen against £1 2s. 5d. as estimated.

This actual cost of manufacturing is the figure at which these goods should be valued for stocktaking purposes, for it represents the amount of all expenses, whether direct or overhead, which has gone into the goods.

Assuming that the actual percentage in the factory and the actual cost per dozen in the warehouse remain normal we shall show neither a profit or a loss on manufacturing at the close of a period.

We are going to pause here and use this figure as a standard cost for these goods, for we have definitely ascertained that the cost of the yarn per dozen after allowing for waste, the Direct Factory Wages, dyeing and the normal overhead is actually covered in this price. The only difference that may arise is in the percentage or rate used for recovering the overhead.

All goods sold will be entered on the Cost and Sales Summary, a separate sheet being used for each kind of goods and for each traveller in order to ascertain the cost of each traveller in relation to his turnover and the profit made on each class of goods.

The total cost of manufacturing is entered, the percentage of general expenses added, and the balance between these and the selling price of perfect goods represents the gross profit.

If the goods are sold as seconds, the gross profit should be the same as for perfect goods, and the loss on seconds entered in the appropriate column, the net profit column being completed by deducting this loss on seconds from the gross profit.

By this means the loss on seconds of each class of goods is ascertained and reliable data is provided to enable this loss to be covered on future estimates.

From the Yarn Store Account we know the value of yarn in store at any time, and from the Work-in-Progress and the Finished Stock Accounts we know the amount of stock on hand.

WORK IN PROGRESS ACCOUNT.

	£		£
Opening Stock ..	1,000	Total Manufacturing Cost of Goods sold by Departments as per the Cost and Sales Summary ..	6,300
Yarn issued from Store	7,800	Total Manufacturing Cost of Goods sent to the Finished Stock ..	12,500
Direct Factory Wages ..	5,000	Balance Stock on Hand	1,325
Outwork	500		
Dyeing	1,000		
Materials	100		
Papers, Boxes, &c. ..	250		
Factory Overhead earned by the percentage used in Costing	3,500		
(Fashioned Department, £1,500 ; Seamless, £2,000.)			
Warehouse Expenses Earned	975		
(Fashioned Department, £375 ; Seamless £600.)			
	<u>£20,125</u>		<u>£20,125</u>

FINISHED STOCK ACCOUNT.

	£		£
Opening Stock ..	1,500	Total Manufacturing Cost of Goods sold from Stock as per the Cost and Sales Summary ..	11,700
Total Manufacturing Cost of Goods received from Departments ..	12,500	Balance Stock on Hand	2,300
	<u>£14,000</u>		<u>£14,000</u>

SALES ACCOUNT (COST AND SALES SUMMARY).

	£		£
Total Manufacturing Cost of Goods sold from Departments	6,300	Sales	20,000
Goods sold from Stock	11,700		
General Expenses	1,000		
Balance Profit	1,000		
	<u>£20,000</u>		<u>£20,000</u>

We have now efficient control of the stocks without which it is not possible to ascertain the exact financial position of any business.

At the close of a financial period it will be necessary to take an inventory of the stocks in the usual manner, but we know what they should amount to in total value and have eliminated all possibility of juggling the stocks in order to hide inefficient management.

We have now arrived at the point when we can draw up Monthly Accounts showing how the business is progressing.

CHAPTER XIII.

MONTHLY COST ACCOUNTS.

It is not necessary to wait until the end of a financial year in order to ascertain the result of the trading, whether there is going to be a profit or a loss, for, with an efficient Counting House and Cost Accountancy methods, we know from day to day, if necessary, how the business is progressing.

This is most valuable information, it places before those responsible for the progress and the prosperity of the concern those essential facts and figures which make it possible for the policy to be planned and carried out successfully. It also makes it possible for losses to be checked in their initial stage, and for unremunerative work to be dropped, and that class of trade cultivated which ensures profits and prosperity.

We can now obtain from the Counting House a Monthly Trial Balance of the Nominal Ledger in the form illustrated. By making the necessary reserves for those expenses which have been incurred and not yet passed to account, we ascertain the total charges against the business to date, and carry them to the debit of the Expense Adjustment Account.

The credit to this account is the amount debited to the Work-in-Progress Account for all those items which are treated as

TRIAL BALANCE OF NOMINAL LEDGER.19..

Account	Dr.	Cr.	Reserve	
			Dr.	Cr.
CAPITAL ACCOUNTS—	£	£	£	£
Shares issued and paid up ..		10,000		
Buildings	2,500			
Plant and Machinery	5,000			
Fixtures	500			
Shafting	100			
CONTROL ACCOUNTS, &C.—				
Stock on Hand—Yarn	500			
Work in Progress	1,000			
Finished Stock	1,500			
Cash in Hand	50			
Cash in Bank	400			
Bought Ledger		2,800		
Sold Ledger	2,000			
SALES, &C.—				
Sales by Departments		7,000		
Sales from Stock		13,000		
Sales of Waste		100		
Discounts Received		100		
DIRECT ITEMS—				
Direct Factory Wages	5,000			
Direct Outwork	500			
Dyeing	1,000			
Yarn	8,000			
Materials	100			
Paper, Boxes, &c.	250			
INDIRECT ITEMS—				
Indirect Wages, Factory	400			
Indirect Wages, Warehouse ..	1,500			
Salaries	500			
National Health Insurance ..	50			
Unemployment Insurance ..	50			
Employers' Liability Insurance ..			20	
Rent	100		60	
Rates and Taxes	100			
Lighting	50			
Repairs to Buildings	—			
Depreciation of Buildings ..			20	
Fire Insurance	100			
Power	200			
Repairs and Upkeep of Machinery	250			
Depreciation of Plant and Machinery			150	
Departmental Expenses	100			
General Expenses	50			
Carriage	100		50	
Donations	50			
Travellers' Salaries and Expenses	500			
Commission on Sales	200		200	
Directors' Fees			250	
Discounts Allowed	300			
Total	£33,000	£33,000	£750	—

Overhead in the Factory and Warehouse Departments, and the amount of General Expenses debited to the Cost and Sales Summary Account.

EXPENSE ADJUSTMENT AND PROFIT AND LOSS ACCOUNT.

	£		£
Indirect Expenses, as shown by the Trial Balance	4,600	Expenses earned by the percentage or rate per dozen :—	
		FASHIONED DEPARTMENT :	
Reserve for Expenses incurred but not passed	750	Direct Factory Wages, £2,500—60 per cent. ..	1,500
		Warehouse Output, 6,000 doz. @ 1s. 3d.	375
		SEAMLESS DEPARTMENT :	
		Direct Factory Wages, £2,500—80 per cent. ..	2,000
		Warehouse Output, 12,000 doz. @ 1s. ..	600
Balance, being the excess of Earnings over Expenses incurred, carried down	125	GENERAL EXPENSES :	
	<u>£5,475</u>	5 per cent. on Sales ..	1,000
	£		<u>£5,475</u>
Balance : Net Profit to date agreeing with the Monthly Trading and Profit & Loss Account	1,325	Balance brought down ..	125
		Balance : Profit from the Cost and Sales Summary Account ..	1,000
		Sales of Waste	100
		Discounts Received ..	100
	<u>£1,325</u>		<u>£1,325</u>

The difference between the expenses actually incurred and the total amount of expenses that has been recovered by the percentage or rate is now found to be £125 and this balance is brought down as a profit beyond that shown on the Cost and Sales Summary.

It proves the accuracy of the percentage or rates used in recovering the Overhead, and shows whether any alteration in these rates is necessary.

MONTHLY TRADING AND PROFIT AND LOSS ACCOUNT.

	£	£	£	£
To Opening Stock—Yarn	..	..	..	700
Work in Progress	..	..	..	1,325
Finished Goods ..	..	..	..	2,300
				<u>4,325</u>
To Direct Items—				20,000
Direct Factory Wages	..	..	..	100
Direct Outwork	..	..	..	100
Dyeing ..	..	..	..	..
Yarn ..	..	..	..	..
Materials ..	..	..	..	..
Paper, Boxes, &c...	..	..	..	..
				<u>4,325</u>
To Indirect Items—				20,000
Indirect Factory Wages	..	..	..	100
Indirect Warehouse Wages	..	..	..	100
Salaries ..	..	..	..	..
Nat. Health Insurance	..	..	..	..
Unemployment Insurance	..	..	..	..
Emp. Liability Insurance	..	..	..	..
Rent ..	..	..	..	..
Rates and Taxes	..	..	..	..
Lighting ..	..	..	..	..
Repairs to Buildings	..	..	..	..
Depreciation of Buildings	..	..	..	..
Fire Insurance	..	..	..	..
Power ..	..	..	..	..
Repairs to Plant	..	..	..	..
Depreciation of Plant	..	..	..	..
Departmental Expenses	..	..	..	..
General Expenses	..	..	..	..
Carriage ..	..	..	..	..
Donations ..	..	..	..	..
Travellers' Salaries and Expenses	..	..	..	..
Commission on Sales	..	..	..	..
Directors' Fees ..	..	..	..	..
Discounts Allowed	..	..	..	..
				<u>4,325</u>
To Net Profit to date	..	..	..	100
				<u>20,000</u>
				<u>24,325</u>

The sales of waste and the discounts received must be brought into this account, as they are not direct items in costing the goods.

Having the Trial Balance and knowing the stock remaining on hand from the Yarn Store Account, the Work-in-Progress Account and the Finished Stock Account, we are in a position to draw up the Monthly Trading and Profit and Loss Account for the business as a whole.

The profit or loss on this Monthly Trading and Profit and Loss Account will be the same as is shown by the Expense Adjustment and Profit and Loss Account.

If we require to know the Departmental profit or loss for each month the figures will be available from the analysis side of the Nominal Ledger.

It would not be necessary to make a full analysis of the indirect expenses monthly, for the average for the past period can be taken and the Expense Adjustment Account will show whether any Department has failed to earn sufficient to cover its average expenses.

Should there be a low production in any department the direct items will fall in sympathy and some portion of the Indirect Expenses may also be a lesser amount, but a great portion of these Indirect Expenses will have to be met whether the Department is fully occupied or only working half-time.

With a lower production the percentage or rate used in estimating will be insufficient to meet the expenses actually incurred and there will be a loss on the Expense Adjustment Account, because the Departments have not produced enough goods to recover their expenses.

This will reduce the profit as shown on the Cost and Sales Summary.

It is not advisable to change the percentage or the rate for overhead to meet conditions which are not normal, otherwise there will be no stability in the selling price.

Selling value has not a direct relation to the Cost Price, because some lines will yield a much larger percentage of profit than others.

In cases where there is much competition or a falling-off in trade, it may be necessary to take orders at the bare cost of manufacturing in order to keep the plant running.

It may even be necessary to take orders at a loss so as to find employment. If the price obtained for the goods covers all the direct items and earns some of the expenses which have to be paid whether the factory is running or not it is sound policy, for the taking of the order prevents a greater loss.

It is therefore very evident that it is necessary to organise the Counting House and the Cost Accounts of a business so that there is a clear understanding of the financial position, a full knowledge of the progress of the business, valuable information available to enable policy to be decided and a guarantee that there will be no loss that is not anticipated.

Cost Accountancy cannot fail to bring to light the position and the progress of the business, but without these methods all is dark and indefinite, and the financial result is not known until the audit is completed.

CHAPTER XIV.

MANAGEMENT.

Given an efficient system of Cost Accounts it is unnecessary for the manager to be constantly running in and out of the Factory and the Warehouse, worrying himself over details that can be left to a subordinate, for the work will proceed smoothly and efficiently, running like a well-balanced piece of machinery.

The true test of efficiency in management is this steady, sweet running of the plant, without friction and loss of effort. The day of bluff and bluster, of driving the Factory and squeezing the worker is passing, and new conditions are fast becoming essential to efficiency in production.

More money will be saved, greater output will be secured, less wastage and loss will be incurred if the manager will study the Cost Accounts and benefit by the lessons therein contained, than ever would under any "Push the yarn into the factory to get the goods out" method.

The manager can walk round the Factory, inspect the goods in the process of making, weigh occasional lots for his own satisfaction, look through the Factory Lot Book to see how the different orders are progressing, investigate the reason for

stagnant stocks in the rough and finished state, watch the progress of the work in the warehouse, and inspect the finished article, resting confident that the result will come out as is shown by the Cost Accounts.

He should see all the costs when completed, ascertain the cause of any excessive waste and endeavour to secure that all orders are produced at not more than the estimated cost. He should also see that the estimates are prepared with as little allowance for wastage as is reasonable and safe, so that orders are not lost on account of over-estimating.

In all these matters that appertain to the production of the goods, he should accept the responsibility and hold those in charge of each section responsible, but he should not interfere in any way with the methods of accountancy or of cost accountancy, for the Cost Accounts are there to show up without fear or favour all faults of production, all losses, whether losses due to material or faulty methods of production.

The modern manager who appreciates the results to be gained through a study of the Cost Accounts will have a factory producing efficiently and profitably.

The old-fashioned, inefficient man who rules by rule of thumb, who neglects to profit by the lessons that can be learned from costing, will eventually be compelled to make way, for the success of any business cannot be secured under modern conditions of manufacturing without an efficient system of Factory Organisation, Routine and Cost Accounts.

CHAPTER XV.

TECHNICAL CALCULATIONS.

It is not the object of this book to go fully into the question of yarn calculations, but it will be of use to the reader to have a little information on the system of numbering the different kinds of yarns.

Cotton yarns are numbered on the basis of the number of hanks, each containing 840 yards, that weigh one pound. If 16 hanks weigh 1 lb., then the count of that yarn is 16s., and there would be 16×840 yards, or 13,440 yards in the lb.

Worsted yarns are usually numbered on the basis of a hank of 560 yards ; therefore 16s. worsted would be 16 hanks of 560 yards each to the lb. 24s. worsted would be 24 hanks of 560 yards each, or a total of 13,440 yards to the lb., the same yardage as 16s. cotton.

Artificial silk yarns are numbered in a different manner, the basis being the weight of a single hank of 520 yards in deniers. If 520 yards weighed 150 deniers, the count would be 150 deniers. A denier is $\frac{3}{1,600}$ of an ounce, therefore

$$\frac{4,437,333}{\text{yardage in 1 lb.}} = \text{equals count in deniers.}$$

It will therefore be seen that to ascertain the equivalent count between cotton and worsted is fairly simple. To convert a cotton count to a worsted count we add one-half to the cotton count. To convert a worsted count to a cotton count we must deduct one-third from the worsted count.

COMPARISON OF YARN COUNTS.

Yards per lb.	Cotton Count. Hanks of 840 yds. per lb.	Worsted Count. Hanks of 560 yds. per lb.	Artificial Silk. Weight in Deniers of a Hank of 520 yds.
8,400	10	15	528
10,080	12	18	440
11,760	14	21	377
13,440	16	24	330
15,120	18	27	293
16,800	20	30	264
18,480	22	33	240
20,160	24	36	220
21,840	26	39	203
23,520	28	42	188
25,200	30	45	176
26,880	32	48	165
28,560	34	51	155
30,240	36	54	146
31,920	38	57	139
33,600	40	60	132

To ascertain the equivalent of a given count of cotton in artificial silk requires a little more calculation.

$$\frac{3}{1,600} \text{ oz. is the weight of one denier,}$$

therefore $8,533\frac{1}{3}$ deniers equal 1 lb.

$$\frac{8,533\frac{1}{3} \text{ deniers} \times 520 \text{ yards}}{\text{known cotton count} \times 840 \text{ yds.}} = \text{the artificial silk count,}$$

equivalent to the known cotton count.

Thus 20s. cotton is equivalent to 264 deniers artificial silk, as follows :—

$$\frac{8,533\frac{1}{2} \times 520}{20 \times 840} = \frac{4,437,333}{16,800} = 264.$$

All the calculations necessary can be ascertained by similar methods.

The Cost Office should be in the position to check these figures, and if the estimating is done by the Cost Office attention to these calculations is necessary.

Yarns can be tested for count by reeling off a definite fixed length and weighing same on a balance specially manufactured for this purpose, the indicator showing the count in the various systems.

Appliances are also made for testing the strength, stretch and the twist or the number of turns per inch, and should be available in all offices where efficiency in yarn control is required.

There is a relation between the number of needles per inch in a frame and the count of the yarn that can be most successfully worked on that frame.

Usually the gauge of a frame is calculated on the solid frame principle, that is the number of leads in three inches. Each of these leads contain two needles ; therefore, if there were 33 leads in three inches, there would be 22 needles per inch.

This frame would be a 33-gauge frame, and if we have ascertained that the yarn that can be most satisfactorily worked on this gauge machine is 20s. cotton, we should be limited to this count in cotton or its equivalents in other counts.

Machines are built to take as large a variation in count of yarn as possible, so that a few counts up or down may be worked on this frame. The work will be most successfully performed

on the medium counts, thus we should only use this machine for producing goods using, say, 18s. to 22s. single cotton, or the equivalent in two-fold or three-fold yarns, $36/2$ to $44/2$ or $54/3$ to $66/3$.

If the frame was 39-guage, then the needles per inch would be 26, and we might find that 25s. single was the most suitable count of yarn to be used.

Each manufacturer should tabulate his knitting results so as to find the most suitable counts to be worked on the various gauge machines in his factory.

It is now evident that the needles per inch in the machine will regulate the kind of goods that can be made in the factory, and that if there is a falling-off of orders for certain lines the frames cannot be turned on to entirely different classes of work.

Under these circumstances it might be found necessary to ascertain the cost of running each frame separately. This is a development which can only be attempted when the system outlined herein is satisfactorily working, for, unless the fundamental basis is correct, any subdivision into machine costs would have little real value.

You cannot put the roof on a house unless you have the structure complete in other essentials. You cannot successfully ascertain the cost of running each machine, unless you have correct costs of the Department of which that machine is a part.

Having got the Cost Accounts on a sound and practical basis, the way is open to further development, as may be found necessary, but it will be wasted effort to try to subdivide the costs into machine units unless the basis of the charges to Departments is on a sure and safe foundation.

CHAPTER XVI.

CONCLUSION.

No system can be taken as it stands and applied to every factory in the industry for which it is compiled, because different factories have their own peculiarities and prejudices ; but it will be found that the fundamental basic principles will be the same and must be followed in order to obtain full value and efficiency from the system.

In applying a system such as is outlined in this volume it is first of all necessary to ascertain the normal division of the business into Departments.

It may be necessary to have Fashioned Hose, Fashioned Half Hose, Fashioned Underwear, Seamless Hose, Seamless Half Hose, Seamless Socks, Cut Underwear, Dyehouse, Trimming and Finishing Departments.

The Overhead Expenses in the Warehouse or Making Up Department of Fashioned or Cut Underwear and similar goods will have to be ascertained as a percentage to the Direct Productive Wages of the department, and not as an average rate per dozen for the wages paid will vary on the different lines.

In deciding the method to adopt in any department not illustrated in this volume it is necessary to find the

unit of production and recover the Overhead Expenses on that basis.

If the factory is large and produces its own power, has its own mechanics' shop, does its own printing, &c., it will be necessary to have Service Departments in addition to the main Producing Departments.

It will be necessary to treat these Service Departments as such, debit them with their own expenses and, having ascertained their total cost, debit the Producing Departments according to the service rendered.

If the factory is small possibly a division into factory and warehouse will be sufficient in order to ascertain the percentage of Factory Overhead to the Direct Wages and the rate per dozen in the warehouse.

If there is more than one department it is advisable that Departmental Accounts should be kept. These Departmental Accounts must be in agreement with the General Trading and Profit and Loss Accounts.

It is of vital importance that only those items which are to be calculated as direct items on the individual estimates or costed as such should appear as direct items in the Accounts.

All the expenses which are not calculated as direct items on the cost per dozen must come in the Overhead, otherwise the basis of recovering the Overhead will be incorrect.

The principal item to watch, and it should be very closely watched, is the Yarn, especially if the market is fluctuating rapidly. Speculation in yarns should be avoided and yarn only ordered to cover orders on hand.

If, however, there is any speculation in yarns an account should be opened to take the difference between the actual Purchase Price of the yarn and the price at which the yarn is costed on the individual orders.

By this means the profit or loss on the speculation is taken out of manufacturing and is shown as a department to itself.

The drafting of the necessary forms and accounts is not a difficult matter and they can be put into operation by anyone with a knowledge of the business and of Cost Accountancy.

Let me very clearly state that the value of any system can be nullified by well-meaning gentlemen with a smattering of Cost Accountancy and a mania for forms.

Cost Accountancy properly applied, scientifically controlled, every record serving its appointed purpose and avoiding duplication of effort, is one of the greatest assets a business can possess. A mania for forms and records is not Cost Accountancy.

The great underlying principle, the fundamental principle, is to ascertain the cost of each department or process, and having ascertained that cost, to discover the unit of production, be it Wages or Quantity, and to recover that cost on the unit of production.

A system of Cost Accountancy on a sound and practical basis, aiming at real records, acting as a brake on the losses in production, keeping in line with the general system of the business, being able to correctly anticipate the Balance Sheet figure of Profit or Loss, provide Monthly Accounts for the Board, locate Profits and Losses to the departments and to the individual orders, cannot help but be the most valuable of departments.

If I have through this volume spread the light or even the desire for light on the burning question of "How to Ascertain the Cost of Production?" if it enables my readers to improve their methods one little bit, if it advances the day when Cost Accounting in the Hosiery industry will be recognised as the essential to success, then my labour in writing this book will not have been in vain.

